

REMARKS

Consideration of the following remarks and reconsideration and withdrawal of the rejections contained in the Office Action dated March 9, 2009 are earnestly solicited.

The present invention relates to the preparation of cellulose ethers from high bulk density raw cotton linters, as opposed to purified cotton linters, or cellulose from other sources. These short fiber length materials have unexpectedly high bulk density. Such materials provide a unique composition that are especially well suited for the commercial manufacture of premium quality cellulose ether derivatives by using either slurry or high solids processes thereby resulting in an increased utilization of plant assets without additional investment.

Additionally, the present invention eliminates costly purification of raw cotton linters. An additional surprising benefit of the present invention is that it can provide unique composition comprised of high molecular weight cellulose materials suitable as feedstock for the production of cellulose derivatives.

Claim Rejections – 35 USC §112, second paragraph

In paragraph 6 of the Office Action, claims 98-123 are rejected under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants respectfully note that the present application contains claims numbered up to 103 and not 123. Applicants are treating this rejection as being directed to claims 98-103.

Applicants respectfully submit that they cannot be fully responsive to the rejection presented in paragraph 6, since a full explanation of the deficiency of the claims was not supplied in the Office Action. No identification of the particular term(s) or limitations which render claims 98-103 indefinite or statement why such terms or limitations render the claims indefinite was provided, as required by MPEP 706.03(d).

Applicants respectfully request that, if the rejection of claims 98-103 is to be maintained, that the next Office Action provide a full explanation of the deficiency of the claims and identify the particular term(s) or limitations which render claims 98-103 indefinite and provide a statement why such terms or limitations render the claims indefinite.

Claim Rejections – 35 USC § 103

In paragraph 7 of the Office Action, claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 and 98-103 were rejected under 35 USC § 103(a) as being unpatentable over DE 4034709 (Hayakawa) or Henry et al. (US Patent No. 3,085,087) (Henry) in view of Branan et al. (US Patent No. 2,667,480) (Branan).

Applicants respectfully assert that the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66 and 94-96 and 98-103 as being unpatentable over Hayakawa or Henry in view of Branan is traversed for the reason that the combination of either Hayakawa or Henry with Branan would not result in applicants' invention, as claimed.

Hayakawa is directed to the use of RCL to manufacture cellulose ethers having a very high viscosity in an aqueous solution for use as an additive in hydraulic cement-based mortars. While Hayakawa does disclose the preparation of cellulose ethers from raw cotton linters, it does not teach or suggest the advantage of using a raw cotton linter having a bulk density of at least 20 g/100 ml and wherein at least 50 wt % of the RCL fibers are in a loose mass that can pass through a US standard sieve size #10 (2 mm opening) as a starting material as is claimed by the applicants.

US Patent No. 3,085,087 to Henry et al. ("Henry"), is directed "...to an improved process or preparing carboxyalkyl cellulose ethers, and, more particularly, to such a process wherein an improved liquid medium is employed to give uniform and efficient etherification of cellulose and, consequently, alkali-soluble and water-soluble cellulose ethers of improved quality." (Column 1, lines 10-15).

Henry never discloses or teaches the preparation of cellulose ethers from high bulk density raw cotton linters, as claimed by applicants. Henry is directed to an improved liquid medium for use in the production of cellulose ethers. The passages recited by the Office Action are directed to Henry's liquid medium as well as the disclosure of various reactants used in the production of cellulose ethers. However, when Henry discusses the types of cellulose used in producing cellulose ethers, the cellulose is described as "...chemically purified cotton linters, wood pulp and various other cellulosic materials are satisfactory of use in the process...the preferred ones are purified cotton linters and α -cellulose wood pulp." (Column 6, lines 17-20.). Henry makes no mention of the use of raw cotton linters in general or the raw cotton linter fibers that a bulk density of at least 20 g/100 ml in particular, as taught and claimed by applicants.

US Patent No. 2,667,480 to Branan is directed to "An improved process for producing the sodium salt of carboxymethyl cellulose." (Column 2, lines 24-26.) When disclosing its preferred embodiment of cellulose for use in its process, Branan states that "A preferred embodiment involves the use of purified cellulose in granular form having a bulk

density of about 30 pounds per cubic foot and having an average particle size of less than 150 microns." (Column 3, lines 41-45.) (Emphasis added.)

Applicants respectfully submit that Branam does not teach or suggest to a person of ordinary skill in the art to use raw cotton linters as the starting material of the claimed process. In fact, Branam is clearly directed to the use of purified cellulose as a starting material for the production of carboxymethyl cellulose. Since Branam clearly directs a person having ordinary skill in the art to use purified cellulose, there would be no teaching or suggestion to a person of ordinary skill in the art to use a raw cotton linters as the starting material for the production of carboxymethyl cellulose. In fact, applicants respectfully submit that a person of ordinary skill in the art would view the teachings of Branam as teaching away from the use of raw cotton linters, as claimed by applicants, since Branam prefers the use of purified cellulose in granular form.

Also, applicants wish to point out that Branam does not teach how the purified cellulose in granular form having a bulk density of about 30 pounds per cubic foot and having an average particle size of less than 150 microns is obtained. As stated by the applicants in the present application, by "substantially reducing the fiber length of cellulose by cutting, it is possible to make cellulose ethers at slurry concentrations greater than 9 wt %. However, extensive cutting of cellulose required to shorten the fiber length is expensive and occasions molecular weight loss of the cellulose. In many applications, the molecular weight loss occurred during cutting of cellulose is undesirable as it calls for higher use level of the cellulose ether to achieve certain application properties." Applicants respectfully note that Branam fails to suggest any practical value the resulting cellulose derivatives might have. The only property determined for the resulting products is their degree of etherification (substitution). Although this represents one of the attributes required, the viscosity-enhancing characteristics of the resultant cellulose ether may be compromised due to its reduced molecular weight. Applicants respectfully submit, that in order to increase the bulk density of the cellulose in granular form, to about 30 lbs per cubic foot, Branam may be extensively cutting or grinding the purified cellulose, thereby reducing its molecular weight and losing one of the benefits of using raw cotton linters, its molecular weight.

Applicants respectfully submit that Branam contains no teaching or suggestion to the person of ordinary skill in the art to substitute the high bulk density raw cotton linters as disclosed by applicants for the purified cellulose in granular form having a bulk density of about 30 pounds per cubic foot starting materials taught as useful in its process.

Applicants respectfully assert that the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103 as being unpatentable over Hayakawa or Henry in view of Branam is traversed. Applicants respectfully request withdrawal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103 under 35 U.S.C. §103(a) and request the allowance of these claims.

In paragraph 9 of the Office Action, claim 47 is rejected under 35 USC § 103(a) as being unpatentable over Hayakawa or Henry in view of Branan patent as applied to Claims 41-46, 48, 49, 51, 56, 57, 66, 94-96 and 98-103 further in view of Savage (US Patent No. 2,949,452).

Applicants respectfully traverse the rejection of claim 47 under 35 USC § 103(a) as being unpatentable over Hayakawa or Henry in view of Branan patent further in view of Savage and respectfully submit that Savage does not provide the necessary teaching or suggestion lacking in Hayakawa or Henry in view of Branan as discussed hereinabove in the traversal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103.

US Patent No. 2,949,452 to Savage (Savage) is directed to "...a process for preparing alkyl hydroxyalkyl celluloses having higher gel points and better aqueous solubility characteristics...." (Column 1, lines 17-19.) One of the issues with prior alkyl hydroxyalkyl celluloses mentioned in Savage was that solutions made from these materials "...were always hazy due to the presence of insoluble solids which had to be removed by centrifuging...." (Column 1, lines 33-35.) In preparing alkyl hydroxyalkyl celluloses, Savage teaches that "[A]lthough any form of cellulose may be employed in the process, it should be apparent that the form used must be capable of substantially uniform penetration and of swelling by the basic material at the concentrations and temperature employed. Cotton linters being a readily available, economical, and easy to handle, represent a preferred form of cellulose." (Column 2, lines 17-22) (Emphasis added.).

While Savage does teach the use of organic amines used as bases in the preparation of cellulose ethers, applicants respectfully assert that Savage does not teach or suggest to a person of ordinary skill in the art that raw cotton linters would be an acceptable source for cellulose since applicants respectfully submit that it would not at all be apparent to a person having ordinary skill in the art that a raw cotton linter, which is acknowledged to be less pure than purified cotton linters, would be a form of cellulose which must be capable of substantially uniform penetration and of swelling by the basic material. Applicants respectfully submit that Savage is teaching the suggesting the use of cellulose sources which would exhibit substantially uniform penetration and would therefore not provide the motivation or suggestion to a person having ordinary skill in the art to substitute the less pure raw cotton linter for a cotton linter. Applicants also respectfully suggest that since Savage is concerned with the production of cellulose ethers which avoid the "hazy" appearance of prior materials, a person of ordinary skill in the art would not be motivated to use an acknowledged less pure form of cellulose in pursuit of a non-hazy final material.

In view of the above, applicants respectfully submit that the rejection of claim 47 under 35 USC § 103(a) as being unpatentable over Hayakawa or Henry in view of Branan patent further in view of Savage has been traversed since a person having ordinary skill in the art would not be motivated to substitute the raw cotton linters of the present invention for

the cotton linters used in its process where a non-hazy material is sought and where the cellulose to be converted is to exhibit substantially uniform penetration and of swelling by the basic material at the concentrations and temperature employed. Applicants respectfully request withdrawal of the rejection of claim 47 under 35 U.S.C. §103(a) and request the allowance of this claim.

In paragraph 11 of the Office Action, claims 58-62 are rejected under 35 USC § 103(a) as being unpatentable over Hayakawa or Henry in view of Branan further in view of Newbury et al.

Applicants respectfully submit that Newbury does not provide the necessary teaching or suggestion lacking in over Hayakawa or Henry in view of Branan as discussed hereinabove in the traversal of the rejection of claims 41-46, 48, 49, 51, 56, 57, 63-66, 94-96 and 98-103. Applicants respectfully request withdrawal of the rejection of claims 58-62 under 35 U.S.C. §103(a) and request the allowance of these claims.

CONCLUSION

In view of the reasons set forth above, Applicants respectfully request withdrawal of the above-mentioned rejections of record, and the allowance of all pending claims, and the holding of this application in condition for allowance. If any points remain of issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the below-listed telephone number.

Except as otherwise stated in the above-noted remarks, Applicants notes that each of the amendments have been made to place the claims in better form for U.S. practice, not to distinguish the claims from prior art references, otherwise narrow the scope of the previously pending claims or comply with the other statutory requirements.

Respectfully submitted,

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